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MI-MegaMod™ Family

Military Chassis Mount DC-DC Converters 10 to 300W
Single, Dual, Triple Outputs

Features

- Inputs: 28, 155, 165 and 270Vdc
- Any output: 2 to 48Vdc
- Up to 13.5W/in³
- High efficiency
- Remote sense
- ZVS/ZCS power architecture
- Low noise FM control
- Size — 1-up half-size: 2.58" x 2.5" x 0.62" (65,5 x 63,5 x 15,7mm)
- Size — 1-up full-size: 4.9" x 2.5" x 0.62" (124,5 x 63,5 x 15,7mm)
- Size — 2-up half-size: 2.58" x 4.9" x 0.62" (65,5 x 124,5 x 15,7mm)
- Size — 2-up full-size: 4.9" x 4.9" x 0.62" (124,5 x 124,5 x 15,7mm)
- Size — 3-up half-size: 2.58" x 7.3" x 0.62" (65,5 x 185,4 x 15,7mm)
- Size — 3-up full-size: 4.9" x 7.3" x 0.62" (124,5 x 185,4 x 15,7mm)

Product Highlights

Vicor's MI-MegaMod family of single, dual, and triple output DC-DC converters provide power system designers with cost-effective, high-performance, off-the-shelf solutions to applications that might otherwise require a custom supply.

Incorporating standard MI-200 or MI-J00 family converters in rugged, chassis mount packages, MegaMods can be ordered with single, dual, or triple outputs, having a combined output power of up to 300W. Totally isolated outputs eliminate efficiency penalties and output interaction problems.

Configuration Chart

			Number of Modules
Full-Size MegaMods			
Single Output			
MI-L –	50 – 100W	4.9" x 2.5" x 0.62"	1
MI-M –	150 – 200W	4.9" x 4.9" x 0.62"	2
MI-N –	300W	4.9" x 7.3" x 0.62"	3
Dual Output			
MI-P –	100 – 200W	4.9" x 4.9" x 0.62"	2
MI-Q –	200 – 300W	4.9" x 7.3" x 0.62"	3
Triple Output			
MI-R –	150 – 300W	4.9" x 7.3" x 0.62"	3
Half-Size MegaMods			
Single Output			
MI-LJ –	10 – 50W	2.58" x 2.5" x 0.62"	1
Dual Output			
MI-PJ –	20 – 100W	2.58" x 4.9" x 0.62"	2
Triple Output			
MI-RJ –	30 – 150W	2.58" x 7.3" x 0.62"	3

Input Voltage

Nominal	Range	Transient
2 = 28Vdc	18 – 50V (1)	60V
5 = 155Vdc	100 – 210V	230V
6 = 270Vdc	125 – 400V (2)	475V
7 = 165Vdc	100 – 310V (3)	

Output Voltage

Z = 2V	T = 6.5V	N = 18.5V
Y = 3.3V	R = 7.5V	3 = 24V
0 = 5V	M = 10V	L = 28V
X = 5.2V	1 = 12V	J = 36V
W = 5.5V	P = 13.8V	K = 40V
V = 5.8V	2 = 15V	4 = 48V

Product Grade

Full-Size
I = –40°C to +85°C
M = –55°C to +85°C

Half-Size
I = –40°C to +100°C
M = –55°C to +100°C

Output Power / Current

	Full-Size ≥5V	Full-Size <5V	Half-Size ≥5V	Half-Size <5V
Y =	50W	10A	A = 10W	—
X =	75W	15A	Z = 25W	5A
W =	100W	20A	Y = 50W	10A
V =	—	30A		

Output Power / Current

	≥5V	<5V
V =	150W	30A
U =	200W	—
S =	—	60A

Output Power / Current

	≥5V	<5V
S =	300W	—
P =	—	90A

(1) *16V operation at 75% load.*
(2) *These units rated at 75% load from 125 – 150Vin: Full-size – 5Vout @ 100W; 2Vout and 3.3Vout @ 30A Half-Size – 5Vout @ 50W; 2V and 3.3V @ 10A.*
(3) *For use with Vicor's MI-AIM*

Full-Size

(At T_{BP} = 25°C, nominal line and 75% load, unless otherwise specified)

PARAMETER	MIN	TYP	MAX	UNITS	NOTES
Input Characteristics					
Inrush charge		120×10^{-6}	200×10^{-6}	Coulombs	Nominal line, per module
Input reflected ripple current – pp:		10		% I_{in}	Nominal line, full load
Input ripple rejection		$30+20\text{Log}\left(\frac{Vin}{Vout}\right)$		dB	120Hz, nominal line
		$20+20\text{Log}\left(\frac{Vin}{Vout}\right)$		dB	2400Hz, nominal line
No load power dissipation		1.35	2.0	Watts	Per module
Output Characteristics					
Setpoint accuracy		0.5	1.0	% Vnom	
Load/line regulation		0.05	0.2	% Vnom	LL to HL, 10% to FL
Load/line regulation		0.2	0.5	% Vnom	LL to HL, NL to 10%
Output temperature drift		0.01	0.02	% / °C	Over rated temperature
Long term drift		0.02		%/1K hours	
Output ripple – p-p: ≤10V		80	150	mV	20MHz bandwidth
12-48V		0.75	1.5	%	20MHz bandwidth
Output voltage trimming(1)	50		110	% Vnom	
Total remote sense compensation	0.5			Vdc	0.25V max. neg. leg
OVP setpoint	115	125	135	% Vnom	Recycle power
Current limit	105		125	% Inom	Automatic restart
Short circuit current			130	% Inom	
Control Pin Characteristics					
Gate out impedance		50		Ohms	
Gate in impedance		10^3		Ohms	
Gate in open circuit voltage		6.0		Vdc	Use open collector
Gate in low threshold	0.65			Vdc	
Gate in low current			6.0	mA	
Isolation Characteristics					
Isolation (input to output)	3,000			Vrms	
Isolation (output to baseplate)	500			Vrms	
Isolation (input to baseplate)	1,500			Vrms	
Thermal Characteristics					
Efficiency		80-90		%	
Baseplate to chassis		0.1		°C/Watt	
Thermal shutdown	90	95	105	°C	
Mechanical Specifications					
Weight					
1-up		9.0 (255)		ounces (grams)	
2-up		1.2 (525)		pounds (grams)	
3-up		1.7 (780)		pounds (grams)	

(1) *10V, 12V, and 15V outputs, standard trim range ±10%. Consult factory for wider trim range.*

Half-Size

(At T_{BP} = 25°C, nominal line and 75% load, unless otherwise specified)

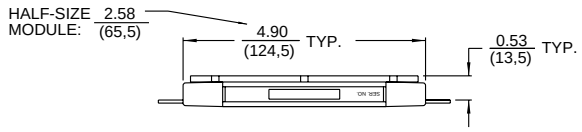
PARAMETER	MIN	TYP	MAX	UNITS	NOTES
Input Characteristics					
Inrush charge		60×10^{-6}	100×10^{-6}	Coulombs	Nominal line, per module
Input reflected ripple current – pp:		10		% I_{in}	Nominal line, full load
Input ripple rejection		$30+20\text{Log}\left(\frac{Vin}{Vout}\right)$		dB	120Hz, nominal line
		$20+20\text{Log}\left(\frac{Vin}{Vout}\right)$		dB	2400Hz, nominal line
No load power dissipation		1.35	2.0	Watts	Per module
Output Characteristics					
Setpoint accuracy		0.5	1.0	% Vnom	
Load/line regulation		0.05	0.2	% Vnom	LL to HL, 10% to FL
Load/line regulation		0.2	0.5	% Vnom	LL to HL, NL to 10%
Output temperature drift		0.01	0.02	% / °C	Over rated temperature
Long term drift		0.02		%/1K hours	
Output ripple – p-p: ≤10V		80	150	mV	20MHz bandwidth
12-48V		0.75	1.5	%	20MHz bandwidth
Output voltage trimming(1)	50		110	% Vnom	
Total remote sense compensation	0.5			Vdc	0.25V max. neg. leg
Current limit	105		125	% Inom	Automatic restart
Control Pin Characteristics					
Gate out impedance		50		Ohms	
Gate in impedance		10^3		Ohms	
Gate in open circuit voltage		6.0		Vdc	Use open collector
Gate in low threshold	0.65			Vdc	
Gate in low current			6.0	mA	
Isolation Characteristics					
Isolation (input to output)	3,000			Vrms	
Isolation (output to baseplate)	500			Vrms	
Isolation (input to baseplate)	1,500			Vrms	
Thermal Characteristics					
Efficiency		80-90		%	
Baseplate to chassis		0.1		°C/Watt	
Mechanical Specifications					
Weight					
1-up		4.5 (127)		ounces (grams)	
2-up		8.8 (250)		ounces (grams)	
3-up		13.3 (377)		ounces (grams)	

(1) *10V, 12V, and 15V outputs, standard trim range ±10%. Consult factory for wider trim range.*

Mechanical Drawing

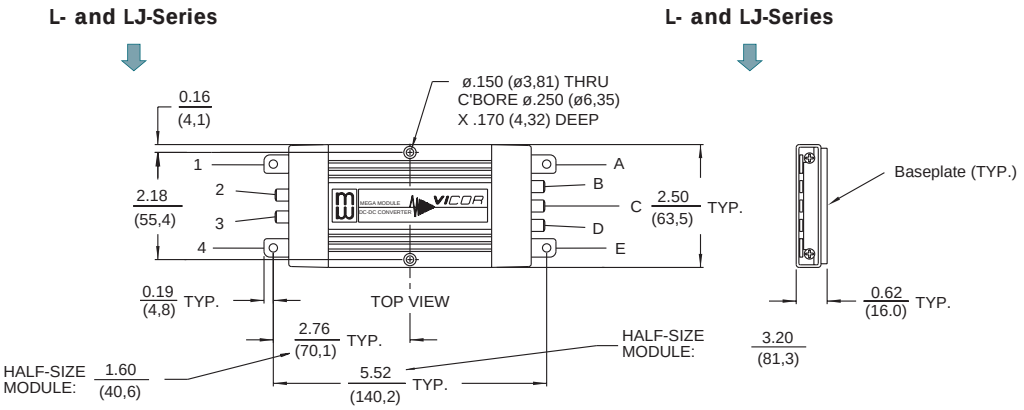
Inputs

Outputs

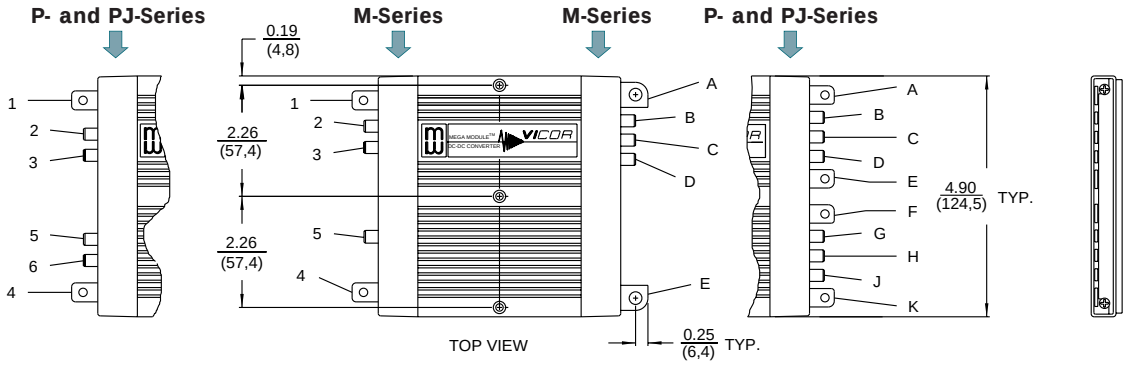


Side view (all models)

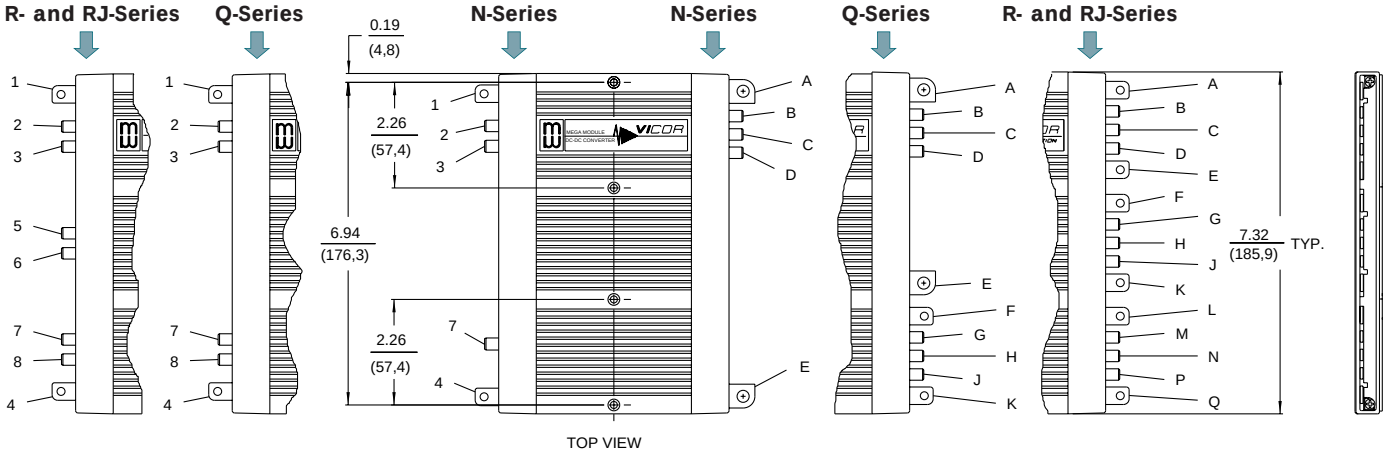
1-Up



2-Up



3-Up



Inputs		Outputs		
1 –Input	5 Gate Out #2	Output #1	Output #2	Output #3
2 Gate Out #1	6 Gate In #2	A –Output	F –Output	L –Output
3 Gate In #1	7 Gate Out #3	B –Sense	G –Sense	M –Sense
4 +Input	8 Gate In #3	C Trim	H Trim	N Trim
		D +Sense	J +Sense	P +Sense
		E +Output	K +Output	Q +Output

Mounting Information
Use #6 machine hardware torqued to 5-7 in-lbs.